Name_____

Chapter 1: Function Sense — Activity 1.2 & 3

Learning Objectives

1. Determine the equation (symbolic representation) that defines a function.
2. Determine the domain and range of a function.
3. Identify the independent and the dependent variables of a function.
4. Represent a function verbally, symbolically, numerically, and graphically.
5. Distinguish between a discrete function and a continuous function.
6. Graph a function using technology.

Key Terms

Use the vocabulary terms listed below to complete each statement.

dependent **independent** **continuous** **graphically** **discrete**

1. _____ variable is another name for the output variable of a function.
2. _____ variable is another name for the input variable of a function.
3. _____ Functions are if they are defined only at isolated input values and do not make sense or are not defined for input values between those values.
4. _____ Functions are if they are defined for all input values, and if there are no gaps between any consecutive input values.
5. _____ When a function is defined , the input variable will be represented on the horizontal axis and the output on the vertical axis .

Practice Exercises

For#6-8, use the function $f(x) = 5x-6$.

6. Determine $f(3)$.

7. Determine $f(-2.7)$.

8. Determine $f(c)$.

For#9-11 use the function $g(y) = -8y^2 + 6.2y + 13$.

9. Determine $g(4)$.

10. Determine $g(-5.1)$.

11. Determine $g(b)$

For #12-14, use the function h(x) = 11.

12. Determine $h(6)$.

13. Determine $h(-14.7)$.

14. Determine $h(d)$.

For #15-17, use the function p(x) = −

15. Determine $p(-2)$.

16. Determine $p(0.5)$.

17. Determine $p(a)$

For #18-20, use the function r (x) = 4 - 2.3x.

18. Determine *r(-7).*

19. Determine *r(8.4).*

20. Determine *r(c).*

For#21-23, use the following scenario:

Your job requires you to attend meetings at other campus locations which are within 50 miles. You are reimbursed at the rate of $0.51 per mile for this travel.

21. Write a verbal statement that describes how the amount of reimbursement is determined.

22. Identify the input variable of the function from Exercise #21.

23. Identify the output variable of the function from Exercise #21.

24. Write the verbal statement from Exercise #18, using function notation for the input variable. Let m represent the input variable. Let *R* represent the function and R (m) the output variable.

25. From Exercise #24, identify the dependent variable

26. Use the equation from Exercise #24 to determine the reimbursement for travel of 74 miles.

27. Determine the domain of the function from Exercise #24.

28. Determine the range of the function from Exercise #24.

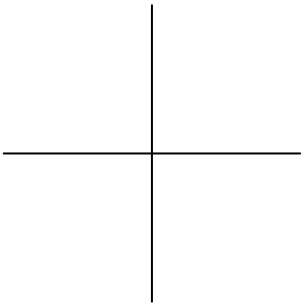
29. Determine the practical domain of the function from Exercise #24.

30. Determine the practical range of the function from Exercise #24.

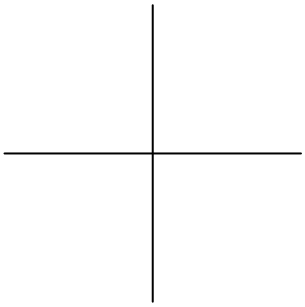
31. For the function {(-3, 6), (9, 0), (7, 4), (4,17)}, determine the domain and range.

For #32-35 using the standard window of a graphing calculator, sketch a graph of each quadratic function.

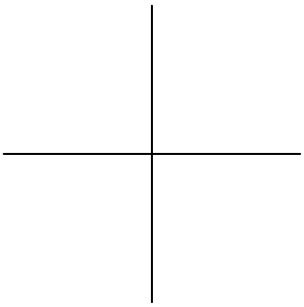
32. $y = 0.5x^2$



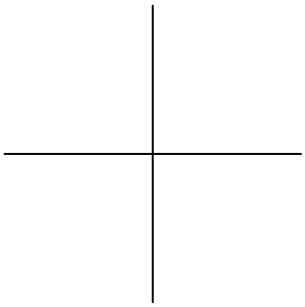
33. $y = -0.5x^2$



34. $y = 0.5x^2 + 2$



35. $y = 0.5x^2 - 2$

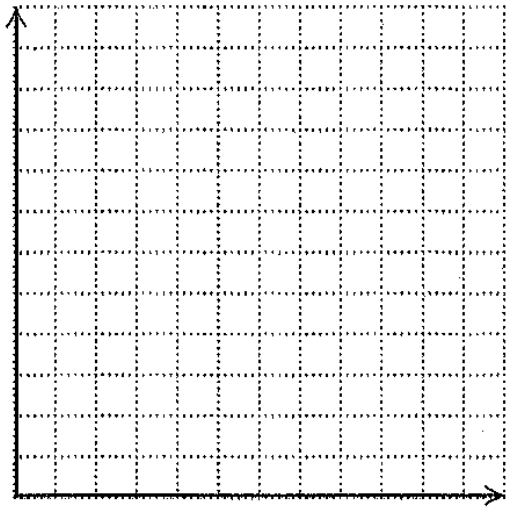


For #36-40, use the following scenario:

The week before final exams, the test center at a community college administered make-up tests to students as follows:

Day	1	2	3	4	5
Number of tests	44	61	59	82	98

36. Plot each ordered pair as a point on an appropriately scaled and labeled set of coordinate axes.



37. Determine the practical domain of the function.

38. Determine the practical range of the function.

39. Is this function discrete? Why or why not?

40. Can this function be defined symbolically? Why or why not?

For #41-45, use the following scenario:

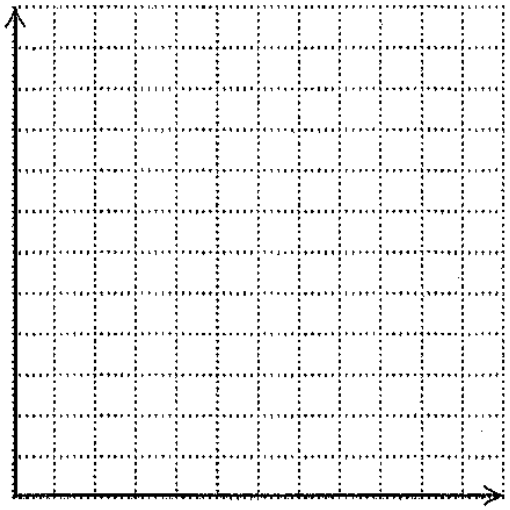
At an amusement park there is a 25% employee discount for food.

41. Give a statement definition of the function

42. Give a symbolic definition of the discount function.

43. Give a numerical definition.

Item Price						
Amount of Discount						



44. Give a graphical definition.

45. Does the graph of the function consist of the five points from Exercise #41? Why or why not?

For #46-49, use the quadratic function $y = O.0005x^2$

46. Using the standard window of your graphing calculator to sketch a graph of the function.

47. Use the table feature of your graphing calculator to complete the following table.

x	-3	-2	-1	0	1	2	3
y							

48. Describe how you would use the results in Exercise #44 to help select an appropriate viewing window.

49. Sketch a graph of the function with the new viewing window.

For #50-53, use the quadratic function $y = 1000x^2$

50. Using the standard window of your graphing calculator to sketch a graph of the function.

51. Use the table feature of your graphing calculator to complete the following table.

x	-3	-2	-1	0	1	2	3
y							

52. Describe how you would use the results in Exercise #48 to help select an appropriate viewing window.

53. Sketch a graph of the function with the new viewing window.

Concept Connections

1. Explain the difference between the domain and the practical domain of a function.

2. What are real numbers?

3. What is the difference between a discrete and continuous function?

4. In what four ways can a function be represented?